

Introduction

Chapter Overview

Americans are highly supportive of science and technology (S&T), but lack knowledge of them. That is the major finding of the National Science Foundation's (NSF's) biennial surveys of Public Attitudes Toward and Understanding of Science and Technology. The most recent survey in this series was conducted in early 2001.¹

Statistics on Americans' lack of knowledge of such subjects as history, geography, mathematics, and science receive a considerable amount of media attention and are regularly cited in speeches given by various educators and policymakers. Even late night talk show hosts make fun of Americans' inability to answer simple questions. Although it is true that many Americans do not do well when quizzed on their knowledge of science and other subjects, it is not always clear how important this deficiency is. For instance, it has been noted that Americans are hardly unique; citizens in other countries perform just as poorly in tests of their basic knowledge of the world around them (Gup 2000). Also, a case can be made that most people do not need to know the answers to be able to function in their daily lives and serve as productive members of society. However, strong critical thinking and problem-solving skills—the ability to evaluate information and make sound decisions—do play an important role in people's lives.²

Chapter Organization

The chapter begins with a discussion of the public's interest in and knowledge of S&T. The level of interest in S&T is an indicator of both the visibility of the science and engineer-

ing (S&E) community's work and the relative importance accorded S&T by society. The first section also contains data on the level of public understanding of both basic science concepts and the scientific process.

In the second section, public attitudes toward S&T are examined. Data on public attitudes toward Federal funding of scientific research and public confidence in the science community are included. In addition, this section contains information on public perceptions of the benefits and harms (or costs) of scientific research, genetic engineering, space exploration, the use of animals in scientific research, global warming, and attitudes toward math and science education.

The next sections feature discussions on the public image of the science community, including public perceptions of scientists and science occupations, and where Americans get information about S&T. Finally, interest in science fiction and the relationship between science and pseudoscience, including concerns about belief in paranormal phenomena, are examined in the last section of the chapter.

In addition, results of surveys sponsored by organizations other than NSF are discussed throughout each section.³

Public Interest in and Knowledge of S&T

Most people say they are interested in S&T. When asked in a survey about their level of interest, few people will admit to having no interest. This is the usual pattern that shows up in NSF surveys in which approximately 9 out of every 10 adults interviewed by telephone report they are either very or moderately interested in new scientific discoveries and the use of new inventions and technologies. (See appendix table 7-1.)

Despite the expression of interest in S&T, few people (less than 15 percent in 2001) feel very well informed about these subjects. And, available evidence suggests that their lack of confidence in their knowledge is justified, because a substantial number of people appear to be unable to answer simple science-related questions.

In this section, four topics will be covered:

- ◆ public interest in S&T and other issues,
- ◆ the public's sense of feeling well informed about S&T and other issues,
- ◆ the "attentive" public for S&T policy, and
- ◆ public understanding of S&T.

¹Of the 15 *Indicators* volumes published since 1972, 14 have included a chapter on public attitudes toward and understanding of S&T. The surveys for the 1972, 1974, and 1976 *Indicators* contained a block of 20 items inserted into an omnibus national personal interview survey conducted by Opinion Research Corporation of Princeton, New Jersey. The 1979 survey was designed by Miller and Prewitt (1979) and analyzed by Miller, Prewitt, and Pearson (1980); the personal interviews were conducted by the Institute for Survey Research at Temple University. Additional national surveys were undertaken for the 1982, 1985, 1987, 1991, and 1993 *Indicators* reports, with telephone interviews conducted by the Public Opinion Laboratory of Northern Illinois University. The chapter for *Science Indicators—1985* was based on a national telephone survey conducted by the Public Opinion Laboratory for Professor George Gerbner of the Annenberg School of Communication at the University of Pennsylvania. In 1995, 1997, and 1999, the Chicago Academy of Sciences conducted surveys that continued the core of attitude and knowledge items from previous *Indicators* studies and included telephone interviews with a random-digit sample of 2,006 adults in 1995, 2,000 in 1997, and 1,882 in 1999. Interviews for the 1995 survey were conducted by the Public Affairs Division of Market Facts Incorporated. The interviews for the 1997 and 1999 surveys were conducted by the National Opinion Research Center. The 2001 survey was conducted by ORC Macro and included telephone interviews with a random-digit sample of adults. The results can be found in past volumes of *Indicators*.

In general, the response rate for previous NSF surveys has been 70 percent or higher. However, for the 1999 and 2001 surveys, the response rates were 66 and 39 percent, respectively. Moreover, the highly educated were overrepresented in the 2001 survey, and those with little education, underrepresented. For more information on the 1999 survey methodology, see Miller, Kimmel, and Hess (2000), and for more information on the 2001 survey, see Duffy, Muzzy, and Robb (2001).

²In a recent survey, workers rated critical thinking skills as more important than job-specific skills such as computer skills (Hebel 2000).

³Every effort was made to include relevant data from sources other than NSF. However, it should be noted that not many survey organizations regularly or even occasionally collect information on public attitudes toward or understanding of S&T.